

10/17/13 Agenda

- Warm Up
- Review Homework - Worksheet 9
- Section 3.6 day 1 - Theorems about
Perpendicular Lines
- Start Homework
 - Worksheets 10

Homework out - Worksheet 8

Warm up: Are these lines parallel, perpendicular or neither? Work with your neighbors if you're not sure how to do this!

$$y = mx + b$$

$$y = -3x + 5$$

$$m = \frac{-3}{1}$$

1

$$m = \frac{1}{3}$$

$$12 + 6y - 2x = 0$$

$$\begin{array}{r} -12 \\ \hline 6y - 2x = -12 \\ \quad +2x \quad +2x \\ \hline 6y = 2x - 12 \\ \frac{6y}{6} = \frac{2x}{6} - \frac{12}{6} \\ y = \frac{1}{3}x - 2 \end{array}$$

X	Y
0	3

SAME SLOPE

OPP. RECIP.

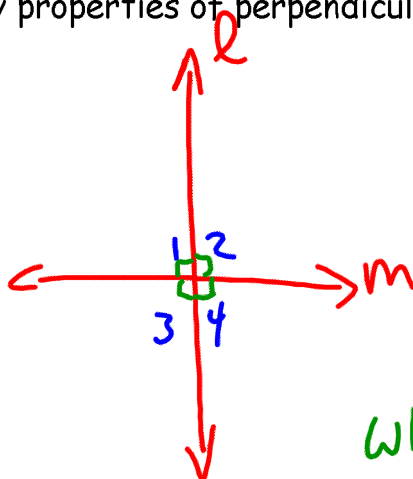
Section 3.6 - Theorems about Perpendicular Lines Target 3H

Goal:

Apply properties of perpendicular lines.

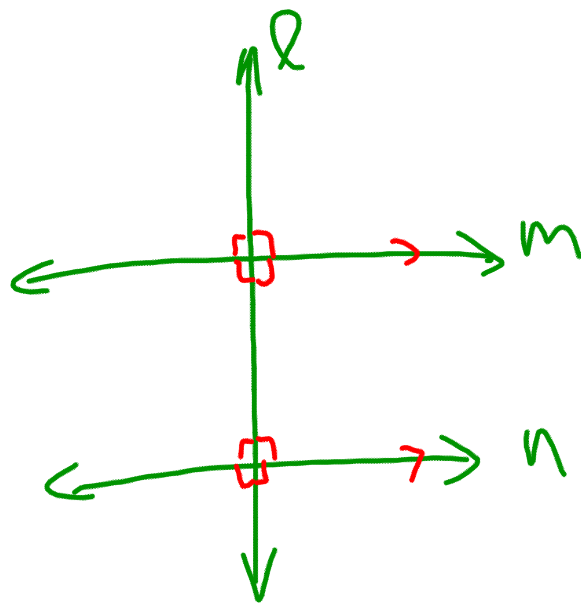
- ADJACENT
- LINEAR PAIR
- SUPPLEMENTARY
- SUM TO 180°

BOTH ARE RIGHT
 \angle s
 $= 90^\circ$



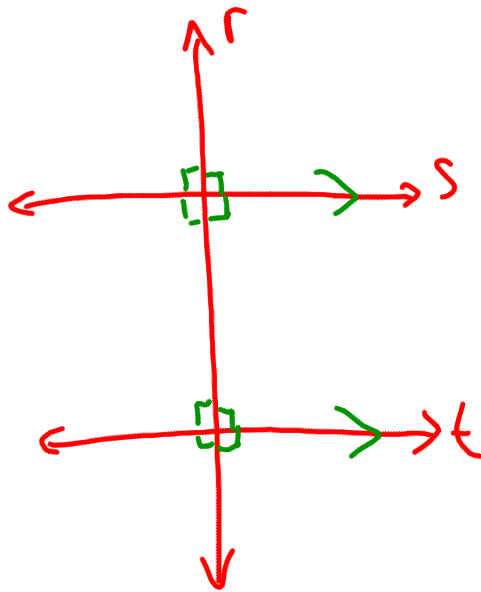
IF $l \perp m$
 WHAT DO WE
 KNOW ABOUT
 $\angle 1$ & $\angle 2$?

WHAT DO WE KNOW
 ABOUT LINES l & m



IF $l \perp m$ &
 $m \parallel n$, WHAT
 ELSE IS TRUE IN
 THIS DIAGRAM?

$$n \perp l$$



$$r \perp s \quad r \perp t$$

WHAT ELSE DO WE
KNOW?

$$s \parallel t$$

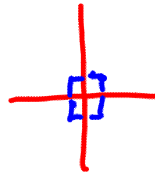
Section 3.6 - Theorems about Perpendicular Lines Target 3H

Theorems:

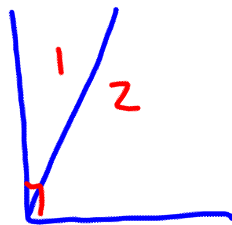
If two lines intersect to form a linear pair of congruent angles, then the lines are perpendicular.



If two lines are perpendicular, then they intersect to form four right angles.



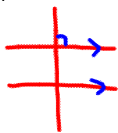
If two sides of two adjacent angles are perpendicular, then the angles are complementary.



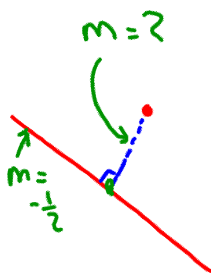
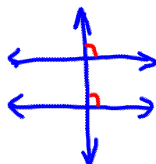
Section 3.6 - Theorems about Perpendicular Lines Target 3H

Theorems:

If a transversal is perpendicular to one of two parallel lines, then it is perpendicular to the other.



In a plane, if two lines are perpendicular to the same line, then they are parallel to each other.



The distance from a point to a line is the length of the perpendicular segment from the point to the line.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

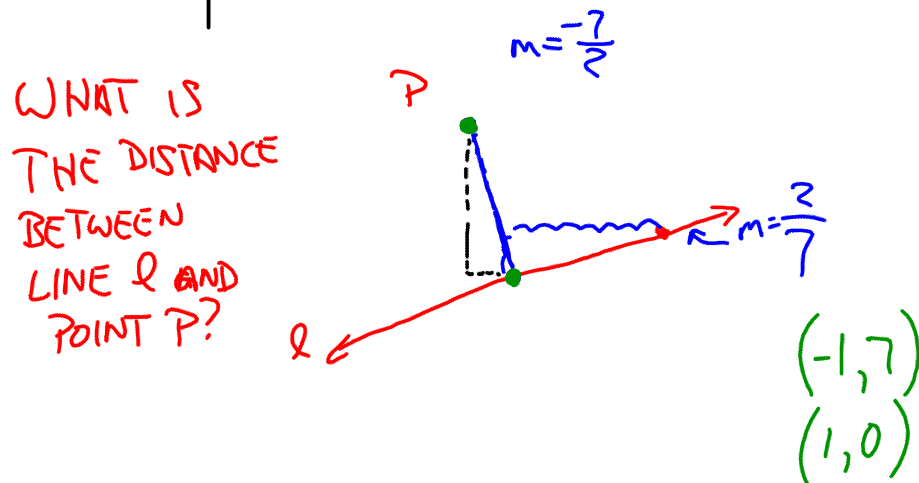
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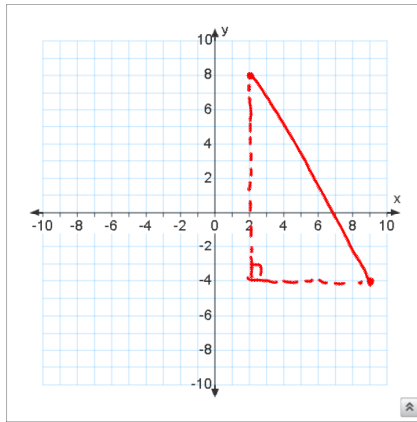
The distance from a point to a line is the length of the perpendicular segment from the point to the line.



$$d = \sqrt{7^2 + 2^2}$$

$$= \sqrt{53}$$

$$\sqrt{\underbrace{(x_2 - x_1)^2}_{2^2} + \underbrace{(y_2 - y_1)^2}_{7^2}}$$



$$a^2 + b^2 = c^2$$

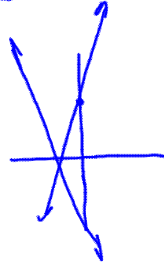
$$12^2 + 7^2 = c^2$$

$$144 + 49 = c^2$$

$$1) \quad y = 3x + 5 \quad m = 3 \quad \frac{3}{1}$$

$$y = \boxed{-3}x - 8 \quad m = -3 \quad \frac{-3}{1}$$

$$y = mx + b$$



SAME $m =$
11

\perp OPP
RECIP.

$$\#2 \quad y = \frac{1}{2}x + 1 \quad m = \frac{1}{2}$$

$$\perp \quad y = -2x + 8 \quad m = -\frac{2}{1}$$

$$7. \quad \begin{array}{r|l} (2 & -3) \\ \hline (-3 & 7) \end{array} m = -\frac{2}{1} \quad \begin{array}{r|l} (1 & 1) \\ \hline (7 & 4) \end{array} m = \frac{1}{2}$$

$$\begin{array}{r|l} 5 & -10 \\ \hline 5 & 5 \end{array} m = \frac{-10}{5} = -2 \quad \begin{array}{r|l} -6 & -3 \\ \hline -6 & -6 \end{array} = \frac{-3}{-6} = \frac{3}{6} = \frac{1}{2}$$